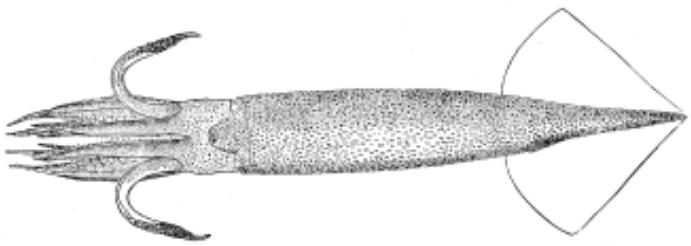

Revised: January 2000

Summary Status

Landings and Abundance Trends

Landings Data

Northern Shortfin Squid

by

L. Hendrickson

The northern shortfin squid, *Illex illecebrosus*, is a highly migratory species distributed in the western Atlantic from Florida to Labrador. Its primary habitat is the offshore continental shelf and slope waters. The species is considered to be a unit stock throughout its range of commercial exploitation, from Cape Hatteras to Newfoundland.

Although overlapping seasonal cohorts have been identified, peak spawning occurs during winter. During autumn, individuals from as far north as Newfoundland undergo a lengthy spawning migration to warmer waters south of Cape Hatteras. Larvae and juveniles are transported northward in the warm waters of the Gulf Stream and growth is rapid during the first few months. Squid spawned during winter migrate onto the continental shelf during late spring.

Northern shortfin squid may attain dorsal mantle lengths of up to 35 cm, although individuals harvested in the commercial fishery are generally less than 25 cm in length. The species lives for up to one year.

A bait fishery for squid originated in U.S. waters during the late 1800s. During 1928-1967, squid landings (including longfin inshore squid, *Loligo pealeii*) ranged between 500-2,000 mt annually. International fleets began to target *Illex illecebrosus* in U.S. waters during 1968 and in Canadian waters (Northwest Atlantic Fisheries Organization or NAFO Subareas 3+4) during 1976. Landings from U.S. and Canadian waters reached peaks of 24,900 mt (in 1976) and 162,000 mt (in 1979), respectively. Total landings from all areas rose from 1,600 mt in 1969 to a peak of 179,300 mt in 1979. In the early 1980s, the stock shifted to a low productivity regime. Landings from Canadian waters declined to 100 mt in 1986, and have since exceeded 10,000 mt only twice (in 1990 and 1997). During 1997, landings from Canadian waters (14,500 mt) were at their highest levels since 1982 and slightly greater than the 1997 U.S. landings (13,600 mt). In 1998, U.S. EEZ landings (22,700 mt) reached their highest levels since 1977, while landings from Canadian waters declined to 1,900 mt.

There has been no fishing in U.S. waters by international fleets since 1986 and total landings have been dominated by the domestic fishery since its inception in 1982. The domestic fishery is conducted primarily during June-September by vessels employing small-mesh bottom trawls near

the edge of the continental shelf.

The U.S. fishery is managed by the Mid-Atlantic Fishery Management Council (MAFMC), under provisions of the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan. Management measures for northern shortfin squid include limited entry, annual quota specifications, and trip limits when 95% of the annual quota is reached. During 1998, the quota of 19,000 mt was harvested completely, and for the first time, the fishery was closed before the season ended. The domestic annual harvest (DAH) for 1999 was set at 22,800 mt. The fishery in Canadian waters is managed under a Total Allowable Catch (TAC) established by NAFO. A TAC of 150,000 mt, in effect since 1980, was reduced to 75,000 mt in 1999.

Since shortfin squid are highly migratory, an unknown fraction of the stock may reside offshore and outside of the area exploited by the fishery or sampled during NEFSC bottom trawl surveys at any given time. Distribution of this species is also strongly influenced by oceanographic factors. For these reasons, it is difficult to monitor trends in this resource. NEFSC autumn survey data indicate marked fluctuations in abundance in the EEZ, with peak levels during 1976-1981 and generally lower levels in more recent years. Since 1991, indices have fluctuated about an intermediate level.

Overfishing occurs on shortfin squid when F_{MSY} is exceeded; 75% of F_{MSY} is specified as the target fishing mortality level. The biomass target is B_{MSY} and the minimum biomass threshold is ½ B_{MSY}. Although F_{MSY} and B_{MSY} are undetermined at present, $F_{50\%}$ (= 0.8) has been recommended as an appropriate target fishing mortality rate.

During the most recent stock assessment, mean weights of Illex squid and logbook catch and effort data were incorporated into a depletion model to produce an average fishing mortality rate estimate during 1994-1998 of F = 0.74 for the U.S. EEZ. Thus, overfishing was not likely occurring during this time frame.

For further information

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Summary Status

Long-term potential catch (MSY)	=	24,000 mt
Biomass corresponding to MSY	=	B_{MSY} = 39,300 mt
Minimum biomass threshold	=	½ B_{MSY} = 19,650 mt
Stock biomass in 1998	=	Unknown
F_{MSY}	=	1.22[1]
F_{TARGET}	=	75% of F_{MSY} = 0.92[1]
Overfishing definition	=	$F_{THRESHOLD} = F_{MSY}$
$F_{1994-1998}$	=	0.74[2] (Implies overfishing was not occurring)
Age at 50% maturity	=	<1 year
Size at 50% maturity	=	200-215 mm dorsal mantle length, males
Assessment level	=	Depletion model
Management	=	Mackerel, Squid, and Butterfish FMP

M = 2.4[1] **$F_{0.1}$** = 2.3[1] **F_{max}** = 4.3[1]

[1] Annual mortality rate, based on a life span of 8 months.
[2] Annual average for the U.S. EEZ during 1994-1998, based on a lifespan of 8 months.

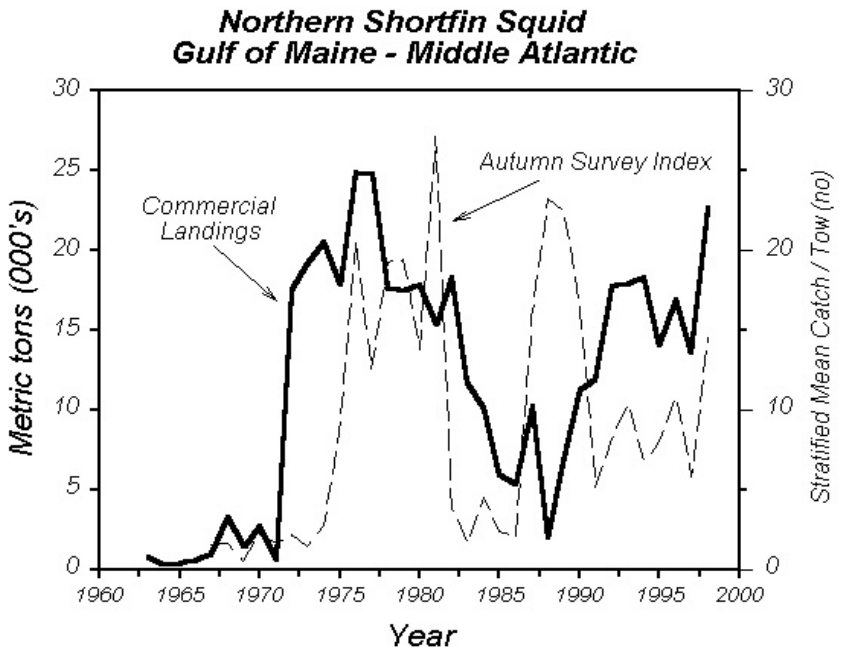

Table 27.1 Commercial landings (thousand metric tons)

	Year										
Category	**1979-88 Average**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
U.S. recreational	-	-	-	-	-	-	-	-	-	-	-
Commercial											
United States	5.1	6.8	11.7	11.9	17.8	18.0	18.3	14.0	17.0	13.6	22.7
Canada	<0.1	-	-	-	-	-	-	-	-	-	-
Other	6.1	-	-	-	-	-	-	-	-	-	-
Total US EEZ[1]	11.6	6.8	11.7	11.9	17.8	18.0	18.3	14.0	17.0	13.6	22.7
NAFO SA 3+4	28.1	7.0	11.0	4.0	2.0	2.7	6.0	1.0	8.7	14.5	1.9
Total nominal catch	39.7	13.8	22.7	15.9	19.8	20.7	24.3	15.0	25.7	28.1	24.6

[1]Does not include landings reported as unidentified squid species